

## PATENT ABSTRACTS OF JAPAN

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## (54) EXCHANGE AND NETWORK SYSTEM USING THE EXCHANGE

## (57)Abstract:

PROBLEM TO BE SOLVED: To allow a called user to easily locate who is a caller before off-hook operation.

SOLUTION: The exchange 2 controlling line connection of a network 1 is provided with a means that requests caller identification information to a caller communication terminal equipment 3 before transmission of a call signal to a called communication terminal equipment 4 and transmits the caller identification information to the called communication terminal equipment 4 together with a call signal upon the receipt of the caller identification information from the caller communication terminal equipment 3 with respect to the request. Furthermore, the caller communication terminal equipment 3 is provided with a means that enters personal information before dialing of the called party and with a means that transmits the entered personal information in response to the request of the caller identification information from the exchange 2. Moreover, the called communication terminal equipment 4 is provided with a means that detects the caller identification information from a call signal received from the exchange 2 and informs it to the user.



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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the swap device in networks, such as an analog telephone network and a digital telephone network, and the network system using this swap device.

[0002]

[Description of the Prior Art] In recent years, there is a thing with the function which notifies the telephone number of call origination side telephone to call-in side telephone in the swap device in an analog telephone network or a digital telephone network. That is, the swap device equipped with this kind of function has memorized the telephone number of all the telephones beforehand connected with the subscriber line. And when the call origination signal was received from call origination side telephone, it had incorporated and transmitted to the call signal [ as opposed to / as opposed to / for the telephone number of this call origination side telephone / read in / call-in side telephone for this telephone number information ]. On the other hand, the destination-side telephone which received the above-mentioned call signal showed an addresser's telephone number to the display until it detected telephone number information from the call signal and off-hook actuation was performed, while emitting the ringer tone.

[0003] Since a destination-side user can judge the telephone from [ from an addresser's displayed telephone number ] whom it is by building a network using the swap device which has such a notice function of the telephone number, there is an advantage which can escape crank calls, such as crank calls, such as a silence telephone, and invitation.

[0004]

[Problem(s) to be Solved by the Invention] However, when a telephone number interception of calls service which was mentioned above was introduced, it was \*\*\*\* that it can specify immediately who an addresser is from the telephone number of the addresser as whom the destination-side user was displayed, and while an addresser had not understood who it is, most carried out off-hook actuation.

[0005] Moreover, although a name can be searched from the addresser telephone number, and it can display or a ringer tone can be changed by the partner by registering the addresser telephone number into telephone beforehand, when there is trouble which must register the addresser telephone number into telephone beforehand in this case, the memory space of telephone increases and it becomes cost quantity.

[0006] This invention was made based on such a situation, and the place made into the 1st purpose tends to provide a destination-side user with the swap device with which an addresser can notify the information which can specify easily who it is before off-hook actuation. Moreover, the place made into the 2nd purpose tends to offer the network system with which a destination-side user can specify easily who an addresser is before off-hook actuation.

[0007]

[Means for Solving the Problem] In order to attain the 1st purpose of the above, this invention In the swap device which controls the line connection between the communication terminals which transmitted the call signal to the communication terminal by the side of a call in according to the dial dispatch from the communication terminal by the side of call origination, and were connected in the network If addresser identification information is required of the communication terminal by the side of call origination and addresser identification information is received from the communication terminal by the side of call origination to this demand before transmitting a call signal to the communication terminal by the side of a call in, he is trying to transmit this addresser identification information to the communication terminal by the side of a call in with a call signal.

[0008] In order to attain the 2nd purpose of the above, moreover, this invention In the network system using the swap device which controls the line connection between the communication terminals which transmitted the call signal to the communication terminal by the side of a call in according to the dial dispatch from the communication terminal by the side of call origination, and were connected in the network Before transmitting a call signal to the communication terminal by the side of a call in, addresser identification information is required of a swap device at the communication terminal by the side of call origination. If addresser identification information is received from the communication terminal by the side of call origination to this demand, a means to transmit this addresser identification information to the communication terminal by the side of a call in with a call signal is established. Moreover, a means to input individual humanity news before the dial dispatch by the side of a call in to the communication terminal by the side of call origination, and a means to transmit the individual humanity news inputted by the input means according to the demand of the addresser identification information from a swap device are established. Furthermore, a means to detect and report addresser identification information to it from the call signal if a call signal is received to the communication terminal by the side of a call in from a swap device is established.

[0009] In this thing, the input means in the communication terminal by the side of call origination has a desirable means to read the individual humanity news recorded on the card. Moreover, a means to memorize the installation information beforehand set as the communication terminal by the side of call origination, and a means to transmit the installation information memorized with the storage means according to the demand of the addresser identification information from a swap device may be established.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained using a drawing. In addition, the gestalt of this operation is the case where this invention is applied to the swap device which controls the line connection between the communication terminals connected to the analog telephone network as a network, and the network system using this swap device, and explains the case

where operate especially a card system public telephone as a call origination side communication terminal, and a text display function addition close person telephone is operated as a communication terminal by the side of a call in.

[0011] Drawing 1 is the schematic diagram of the network system in the gestalt of this operation, and, for one in drawing, as for said swap device and 3, said analog telephone network and 2 are [ said card system public telephone and 4 ] said text display function addition close person telephones.

[0012] Said swap device 2 besides the function as a swap device to the common analog telephone network 1 The database 20 which carries out the storage management of the telephone number of each communication terminal connected to the analog telephone network 1 to this communication terminal corresponding to the terminal ID code of the proper to which it was assigned beforehand is carried. In case a call signal is transmitted to the communication terminal by the side of a call in according to the dial dispatch from the communication terminal by the side of call origination, it has the function which adds the telephone number information on a call origination side communication terminal to this call signal, and is transmitted to it.

[0013] Said card system public telephone 3 has the function which carries out settlement-of-accounts processing of the dial phonecall charges by the credit method, when the information on ID card 5 for a message which it functioned as a common card system public telephone, and also recorded individual humanity news, such as a cardholder's name, with the classification information on a card is read by the card reader 30. Even if said ID card 5 for a message is an IC card which embedded the RAM chip as a storage, it may be a magnetic card which prepared the magnetic layer. When an IC card is used with a natural thing, a card reader 30 is an IC card reader, and when a magnetic card is used, it is a magnetic card reader. Moreover, even if it is other card media, it is applicable by equipping the card reader according to it.

[0014] It has the function which displays the telephone number of a call origination side communication terminal etc. that said text display function addition close person telephone 4 functions as a general text display function addition close person telephone, and also has arrival of the mail on a display 40. Even if said display 40 is the drop which used liquid crystal as a display device, it may be a drop using an EL element. Moreover, even if it uses other display devices, it is applicable if alphabetic characters (a figure, the alphabet, katakana, a hiragana, kanji, etc.) can be displayed.

[0015] Drawing 2 is the block diagram showing the important section configuration of said swap device 2, and the swap device 2 is equipped with the CC section 21 which constituted the microcomputer as a subject, the storage section 22 which forms said database 20, and the message-exchange section 23 which connects the circuit of the call origination side communication terminal X and the call-in side communication terminal Y.

[0016] And said especially CC section 21 is performing line connection processing shown in the flow chart of drawing 5 . That is, if the call origination signal transmitted from the call origination side communication terminal X detects having received a message in the message-exchange section 23 (YES of P1), while searching said database 20, acquiring the telephone number of the call origination side communication terminal X and memorizing in the storage section 22 (P2), the demand command of addresser identification information is transmitted to the call origination side communication terminal X through the message-exchange section 23 (P3).

[0017] If addresser identification information is received through the message-exchange section 23 according to this from the call origination side communication terminal X (YES of P4), the addresser identification information which received will be memorized in the storage section 22 (P5).

[0018] Moreover, if the dial signal of the call-in side communication terminal Y transmitted from the call origination side communication terminal X detects having received a message in the message-exchange section 23 (YES of P6), it will transmit to the call-in side communication terminal Y which minds a nest for the addresser identification information which incorporated from the call origination side communication terminal X, and was memorized in the storage section 22 with the telephone number of the call origination side communication terminal X read from the database 20, minds the message-exchange section 23 for this call signal, and corresponds. If the addresser identification information memorized in the storage section 22 is cleared after an appropriate time, this line connection processing will be ended.

[0019] In addition, if a circuit is cut from (NO of P6) call origination side communication terminal X before the dial signal of the call-in side communication terminal Y receives a message in the message-exchange section 23 (YES of P9), the addresser identification information memorized in the storage section 22 will be cleared, and this line connection processing will be ended.

[0020] Drawing 3 is the block diagram showing the important section configuration of said card system public telephone 3, and the card system public telephone 3 has equipped the hook detection section 31, the dialing key section 32, and the display 33 which detect off-hook one of a hand set (un-illustrating) besides said card reader 30, and ONFUKKU. Moreover, the interface section 37 which controls signal transfer with the swap device 2 of the analog telephone network 1 connected through the terminal control section 34 which constituted the microcomputer as a subject, ROM (Read Only Memoly)35 to which fixed data were set beforehand, RAM (Random Access Memoly)36 which stores adjustable data temporarily, and the telephone line L is carried.

[0021] The text (installation information) which pinpoints the location in which the card system public telephone 3 concerned is installed with the terminal ID code assigned to the card system public telephone 3 concerned is beforehand set to said ROM35.

[0022] And said especially terminal control section 34 is performing call origination processing shown in the flow chart of drawing 6 . That is, the call origination signal incorporating the terminal ID code it was remembered to ROM35 that detected OFUFUKKU of a hand set by the hook detection section 31 is transmitted to a swap device 2 through the interface section 37 (Q2). (YES of Q1) According to this, the installation information it was remembered to ROM35 that received the demand command of addresser identification information from a swap device 2 is transmitted to a swap device 2 through read-out and the interface section 37 (Q4). (YES of Q3)

[0023] Next, a card medium is inserted in a card reader 30, and if it checks that the card medium concerned is said ID card 5 for a message from the classification information recorded on this card medium (YES of Q5), the individual humanity news recorded on this ID card for a message will be transmitted to a swap device 2 through read in and the interface section 37 (Q6). Moreover, if the number to be dialed of a call-in side communication terminal is inputted through the dialing key section 32 (YES of Q7), the dial signal corresponding to this number to be dialed will be transmitted to a swap device 2 through the interface section 37 (Q8).

[0024] If the hook detection section 31 is supervised and ONFUKKU of a hand set is detected after an appropriate time (YES of Q9), ID card 5 for a message inserted in the card reader 30 will be discharged (Q10), and this call origination processing will be ended. In addition, when (NO of Q7) and ONFUKKU of a hand set are detected before the dial signal was inputted, ID card 5 for a message inserted in (YES of Q11) and a card reader 30 is discharged (Q10), and this call origination processing is ended.

[0025] Drawing 4 is the block diagram showing the important section configuration of said display-capabilities addition close person

telephone 4, and the display-capabilities addition close person telephone 4 has equipped the hook detection section 41, the dialing key section 42, and the bell dispatch section 43 which detect off-hook one of a hand set (un-illustrating) besides said display 40, and ONFUKKU. Moreover, the interface section 47 which controls signal transfer with the swap device 2 of the analog telephone network 1 connected through the terminal control section 44 which constituted the microcomputer as a subject, ROM45 to which fixed data were set beforehand, RAM46 which stores adjustable data temporarily, and the telephone line L is carried.

[0026] And said especially terminal control section 44 is performing call-in processing shown in the flow chart of drawing 7. That is, if it detects having received the call-in signal transmitted from a swap device 2 in the interface section 47 (YES of R1), while operating the bell dispatch section 43 and carrying out singing of the ringer tone (R2), addresser identification information is detected from this received call-in signal (R3). And if the addresser identification information of card individual humanity news and installation information is detected, the telephone number of a call origination side communication terminal and such information will be displayed on a display 40 (R4).

[0027] If the hook detection section 41 is supervised and OFUFUKKU of a hand set is detected after an appropriate time (YES of R5), while stopping the bell dispatch section 43 and stopping a ringer tone (the addresser identification information displayed on R6 and a display 40 is eliminated (R7).) Then, if the hook detection section 41 is supervised and OFUFUKKU of a hand set is detected (YES of R8), this call-in processing will be ended.

[0028] Thus, in the gestalt of this constituted operation, when the owner of ID card 5 for a message telephones the subscriber of the display-function addition close person telephone 4 using the card system public telephone 3, a cardholder does off-hook [ of the hand set of the card system public telephone 3 ] first. If it does so, a call origination signal will be transmitted to the swap device 2 of the analog telephone network 1 from this card system public telephone 3. Thereby, in a swap device 2, the telephone number of the above-mentioned card system public telephone 3 is read from a database 20. Moreover, the demand command of addresser identification information is transmitted to the above-mentioned card system public telephone 3 from a swap device 2. According to this, the installation information beforehand set as ROM35 is transmitted to a swap device 2 from the above-mentioned card system public telephone 3.

[0029] Next, a cardholder inserts in a card reader 30 ID card 5 for a message which self owns. If it does so, individual humanity news, such as a cardholder's name recorded on the ID card for a message, will be read, and it will be transmitted to a swap device 2. This memorizes in the storage section 22 in a swap device 2 by making into addresser identification information the installation information and card individual humanity news which received from this card system public telephone 3 with the telephone number of the above-mentioned card system public telephone 3.

[0030] Next, a cardholder operates the dialing key section 32 and inputs a message partner's telephone number. If it does so, a dial signal will be sent to a swap device 2 from the above-mentioned card system public telephone 3. A call signal is transmitted to the display-function addition close person telephone 4 which corresponds to the dial signal which received a message in a swap device 2 by this. At this time, the addresser identification information memorized in the storage section 22 is incorporated and transmitted to a call signal.

[0031] On the other hand, in the display-function addition close person telephone 4 which received the above-mentioned call signal, a ringer tone carries out singing. Moreover, the telephone number of the card system public telephone 3 which is a call origination side, card individual humanity news, such as a name of ID cardholder who is an addresser, and the installation information on the above-mentioned card system public telephone 3 are detected from the call signal which received a message. And such detection information is displayed on a display 40.

[0032] Here, a hand set is connected in the circuit of off-hook, then the above-mentioned card system public telephone 3 and the display-function addition close person telephone 4, and the message of the subscriber of the above-mentioned display-function addition close person telephone 4 is attained. Then, if a message is completed and on hook [ of the hand set of the card system public telephone 3 ] is carried out, phonecall charges will be calculated and are recording management will be carried out according to a cardholder by computer of the commissioned company of the analog telephone network 1. In this way, the cardholder is being asked for the phonecall charges by which are recording management was carried out according to the cardholder by deferred payment from the commissioned company for every month.

[0033] Thus, according to the gestalt of this operation, a swap device 2 transmits the demand command of addresser identification information to the communication terminal by the side of call origination (card system public telephone 3), before transmitting a call signal to the communication terminal by the side of a call in (display-function addition close person telephone 4). And when the card individual humanity news (name etc.) recorded on ID card 5 for a message to this demand command from the communication terminal by the side of call origination (card system public telephone 3) is received, this card individual humanity news is transmitted to the communication terminal by the side of a call in (display-function addition close person telephone 4) with a call signal, and it is made to display on the display 40 of a call-in side communication terminal (display-function addition close person telephone 4).

[0034] Therefore, since a destination-side user can check the card individual humanity news (name etc.) of ID card 5 for a message which an addresser owns before off-hook actuation, even if he does not know the telephone number of the communication terminal of a sending agency, he can specify easily who an addresser is before off-hook actuation. Consequently, an action addressee can escape certainly crank calls, such as crank calls, such as a silence telephone, and invitation. Moreover, in this case, since the owner of ID card 5 for a message which is an addresser should just insert own ID card 5 for a message in the card reader 30 of the card system public telephone 3 which functions as a call origination side communication terminal, an addresser's burden does not increase him.

[0035] Moreover, with the gestalt of this operation, the communication terminal by the side of call origination (card system public telephone 3) has memorized the installation information set up beforehand to ROM35, and has transmitted the above-mentioned installation information irrespective of whether the addresser owns ID card 5 for a message according to the demand of the addresser identification information from a swap device 2. And when the above-mentioned installation information is received, a swap device 2 transmits this installation information to the communication terminal by the side of a call in (display-function addition close person telephone 4) with a call signal, and is made to show it to the display 40 of a call-in side communication terminal (display-function addition close person telephone 4).

[0036] Therefore, since a destination-side user can check the installation of the communication terminal which is a sending agency before off-hook actuation, even if the addresser does not own ID card 5 for a message, he has the advantage which can specify whether it is the telephone were telephoned from the public telephone installed in which location before off-hook actuation.

[0037] Moreover, since it is not necessary to register the addresser telephone number into telephone beforehand, when not producing the trouble which must register the addresser telephone number into telephone, either, the memory space of telephone can be mitigated and cost can be reduced.

[0038] In addition, this invention is not limited to the gestalt of said 1 operation. For example, although the gestalt of said operation showed the case where operated the card system public telephone 3 as a call origination side communication terminal, and the text display function addition close person telephone 4 was operated as a communication terminal by the side of a call in, a subscriber telephone can be operated as a call origination side communication terminal by forming the card reader 30 of ID card 5 for a message in a general subscriber telephone. Moreover, when the ROM chip which memorized individual humanity news, such as a subscriber's name and the address, is built in and the demand command of addresser identification information is received from a swap device 2, you may make it transmit the individual humanity news in the above-mentioned ROM chip in the case of a subscriber telephone. Even if it does not use ID card 30 for a message by carrying out like this, a destination-side user can be provided with the information which can specify an addresser easily.

[0039] Moreover, when the communication terminal by the side of a call in equips the display which can display an image data, it may enable it to more certainly specify an addresser before off-hook, by memorizing not only text, such as a name, but image datas, such as a photograph of his face, as card individual humanity news of ID card 30 for a message, as destination-side YUSA can check not only an addresser's name but a photograph of his face. Moreover, it is possible to identify character codes, such as a name of the ID card for a message, and to, also make it announce by speech synthesis "It is a telephone from Mr. XX" for example.

[0040] Moreover, personal information (an identifier, pet name, etc.) and the information for firms (a firm name, affiliation, name, etc.) are divided and memorized to the ID card for a message as addresser identification information, either is chosen as it, and you may enable it to transmit to it. Since a firm name, affiliation, a name, etc. are displayed in a destination side when for example, the information for firms is chosen and it transmits by carrying out like this, it is lost that an action addressee misses affiliation of an addresser etc. In addition, as for deformation implementation being variously possible in the range which does not deviate from the summary of this invention, it is needless to say that this invention is applied to the network system in a digital telephone network etc.

[0041]

[Effect of the Invention] As explained in full detail above, according to this invention, the swap device which can notify a destination-side user of the information which can specify easily who an addresser is before off-hook actuation can be offered. Moreover, a destination-side user can offer the network system which can specify easily who an addresser is before off-hook actuation.

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[Translation done.]